

SMA4038

NPN Darlington

With built-in flywheel diode

External dimensions SMA (15-pin)

Absolute maximum ratings

(Ta=25°C)

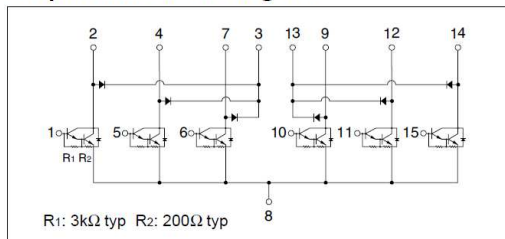
Symbol	Ratings	Unit
V _{CB0}	120	V
V _{CEO}	120	V
V _{EBO}	6	V
I _C	3	A
I _{CP}	5 (PW≤1ms, Du≤50%)	A
I _B	0.2	A
I _F	3 (PW≤0.5ms, Du≤25%)	A
I _{FSM}	5 (PW≤10ms, Single pulse)	A
V _R	120	V
P _T	4 (Ta=25°C) 20 (Tc=25°C)	W
T _J	150	°C
T _{stg}	-40 to +150	°C

Electrical characteristics

(Ta=25°C)

Symbol	Specification			Unit	Conditions
	min	typ	max		
I _{CB0}			10	μA	V _{CB} =120V
I _{EBO}			10	mA	V _{EB} =6V
V _{CEO}	120			V	I _C =25mA
V _{CEO(SUS)}	120			V	I _C =1.5A
h _{FE}	2000	5000	1500		V _{CE} =4V, I _C =1.5A
V _{CE(sat)}		1.1	1.5	V	I _C =1.5A, I _B =3mA
V _{BE(sat)}		1.7	2.0	V	
V _{FEC}		1.4		V	I _{FEC} =1.5A
t _{on}		0.5		μs	V _{CC} ≈30V, I _C =1.5A,
t _{stg}		2.4		μs	I _{B1} =-I _{B2} =3mA
t _f		1.0		μs	V _{CB} =10V, f=1MHz
C _{ob}		30		pF	

Equivalent circuit diagram



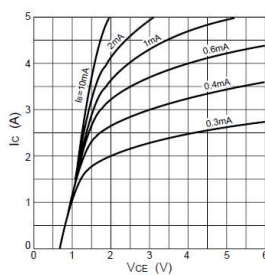
Diode for flyback voltage absorption

(Ta=25°C)

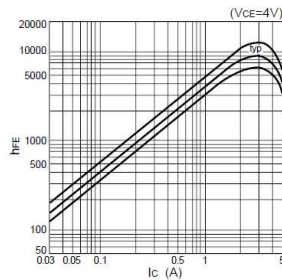
Symbol	Specification			Unit	Conditions
	min	typ	max		
V _R	120			V	I _R =10μA
V _F			1.8	V	I _F =1A
I _R			10	μA	V _R =120V
t _{rr}		100		ns	I _F =±100mA

Characteristic curves

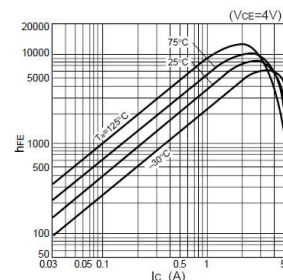
I_C-V_{CE} Characteristics (Typical)



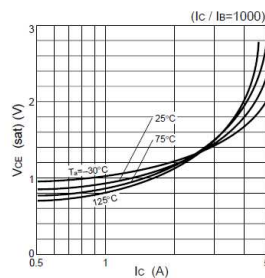
h_{FE}-I_C Characteristics (Typical)



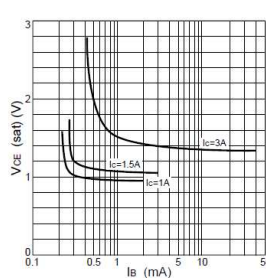
h_{FE}-I_C Temperature Characteristics (Typical)



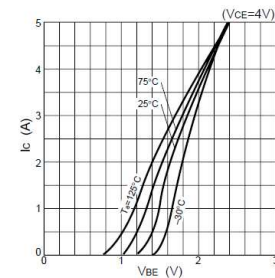
V_{CE(sat)}-I_C Temperature Characteristics (Typical)



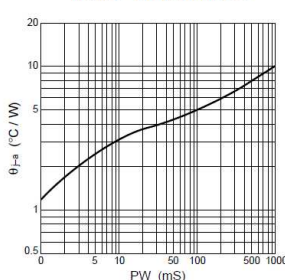
V_{CE(sat)}-I_B Characteristics (Typical)



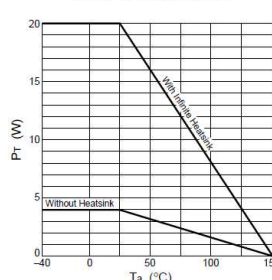
I_C-V_{BE} Temperature Characteristics (Typical)



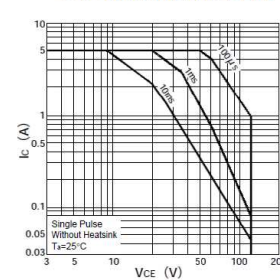
θ_{J-a}-PW Characteristics



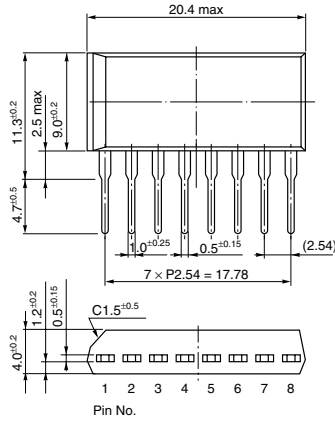
P_T-T_a Characteristics



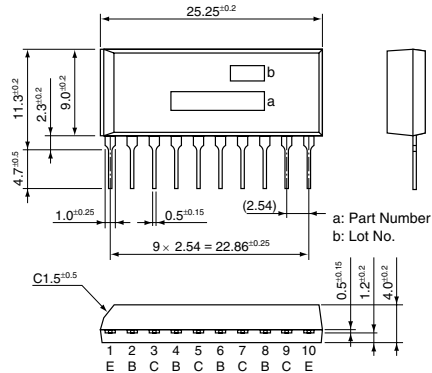
Safe Operating Area (SOA)



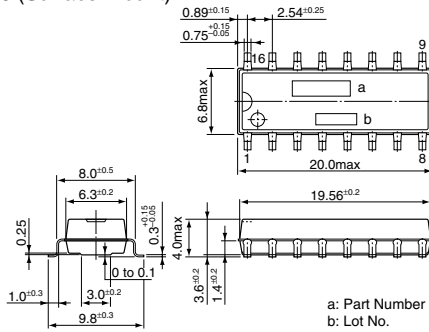
• SIP 8 (STA8Pin)



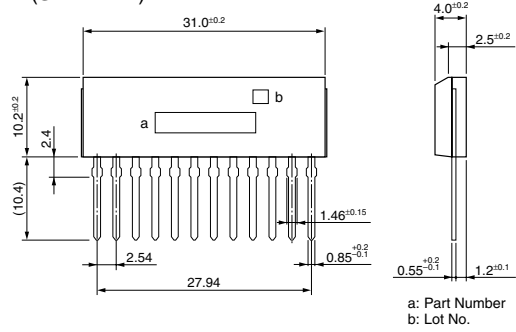
• SIP 10 (STA10Pin)



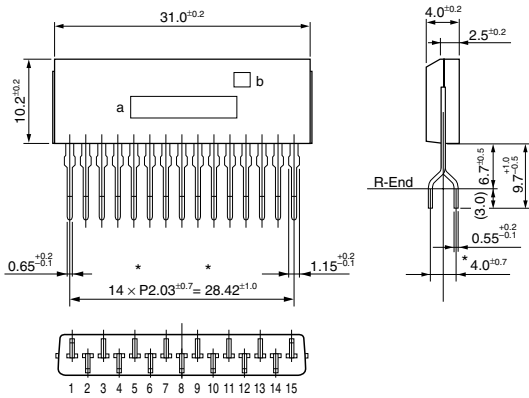
• PS 16 (Surface-Mount)



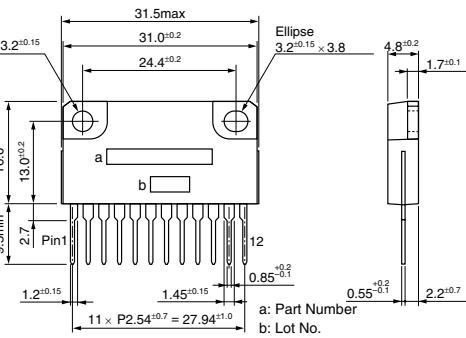
• SIP 12 (SMA12Pin)



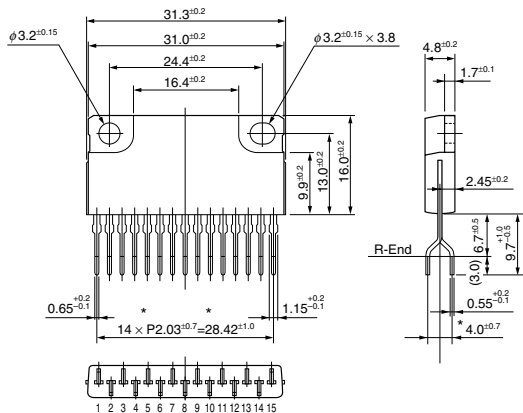
• SIP 15 (SMA15Pin)



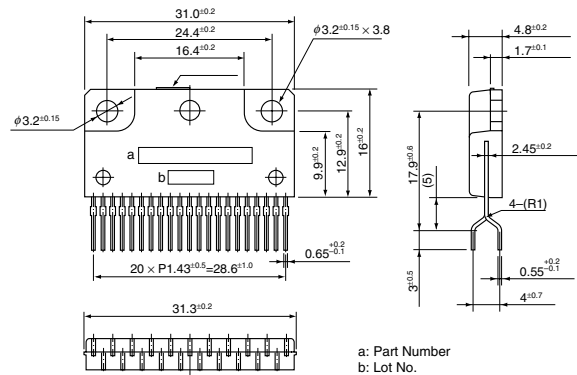
• SIP 12 with Fin (SLA12Pin)



• SIP 15 with Fin (SLA15Pin)



• SIP 21 with Fin (SLA21Pin)



(Unit:mm)